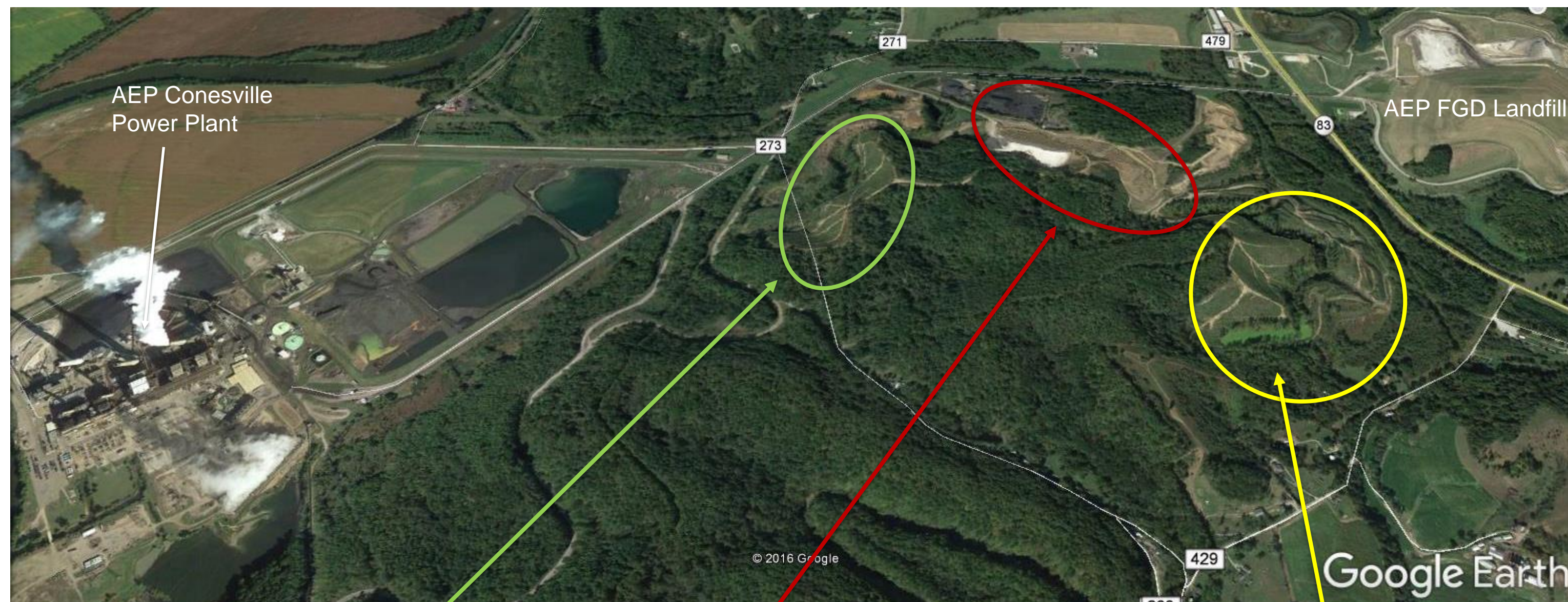


Long-term Collaborative Partnerships for Reclamation of Abandoned Mined Lands (AML) through Beneficial Use of Coal Combustion Residues and Remining at Active Coal Mined Lands

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Conesville's Five Points Project –AEP Partnership



Phase III West
FGD gypsum and fixated FGD by-product under construction

Phases I and II
Large-volume use of FGD gypsum (about 1.5 million tons) in combination with Conesville fixated FGD by-product and fly ash

Phase III East
FGD gypsum and fixated FGD by-product under construction

- The Five Points site is being reclaimed by American Electric Power near the Conesville power plant. Over a 100 acres of AML will be reclaimed over an 8 year partnership with AEP

Cardinal Reclamation Project – Ohio American Energy (OAE) & AEP Partnership



- The OAE Pit 3 22 project was remined and reclaimed by OAE eliminating over 250 ft. of AML highwalls and facilitated the recovery of additional coal reserves over a three year period

Objectives

- Demonstrated the beneficial use of FGD materials in large volumes for reclamation at abandoned and active surface coal mine sites
- Advance the technology to a level of commercial availability
- Monitor and evaluate the impact of reclamation on water quality
- Promote the use of high sulfur coal by providing economically viable and environmentally acceptable alternatives to landfilling
- Eliminate dangerous highwalls near power plants

Innovative Reclamation Practices at Conesville and Cardinal Sites

Conesville Five Points Site



Five Points Phase II placement - 2013

Five Points Planting of end dump spoil piles with compatible grasses to prevent erosion - 2015

Five Points- 11,000 trees planted 89 % survival (including volunteers) after 2nd growing season 20 acres reforested - 2018

Cardinal Star Ridge Site



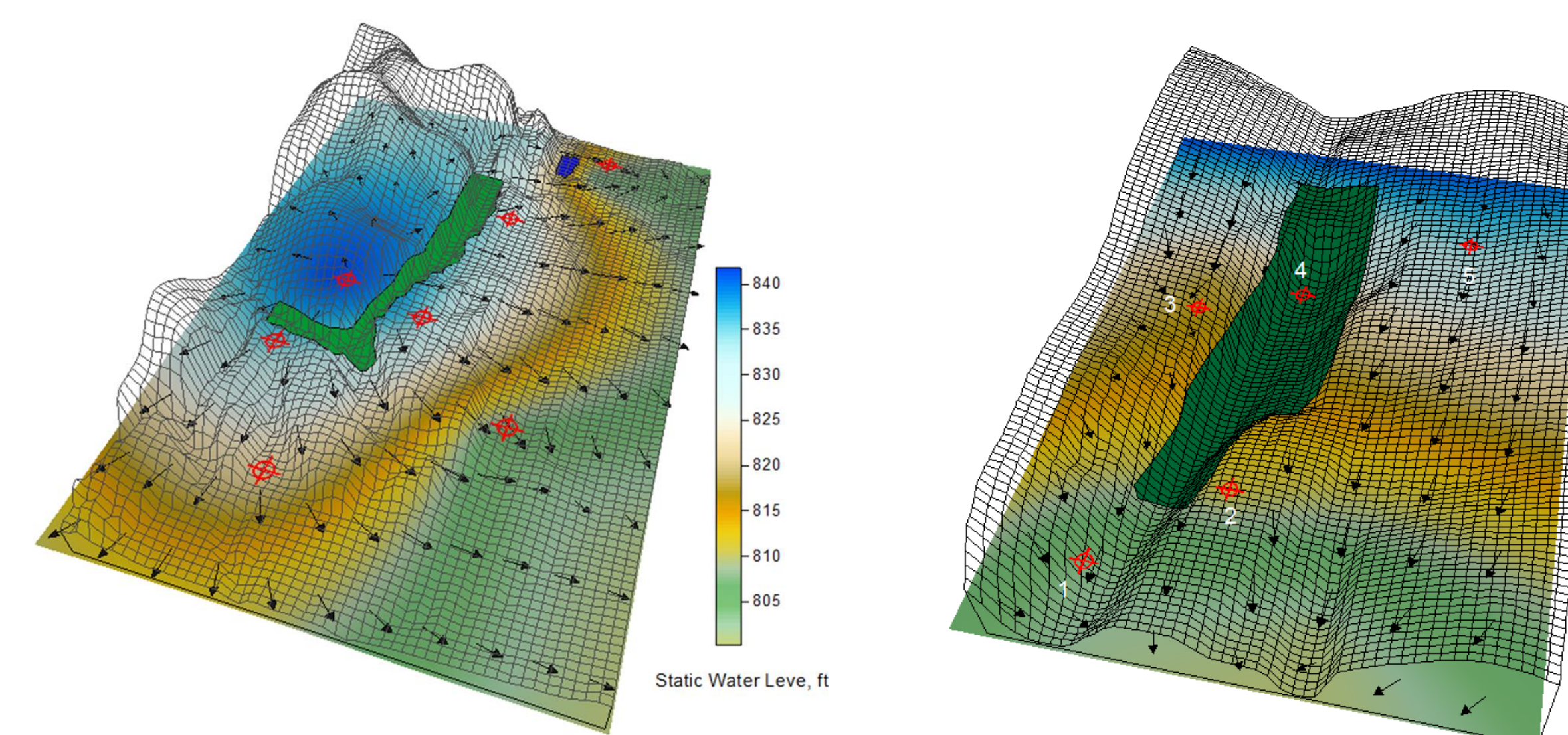
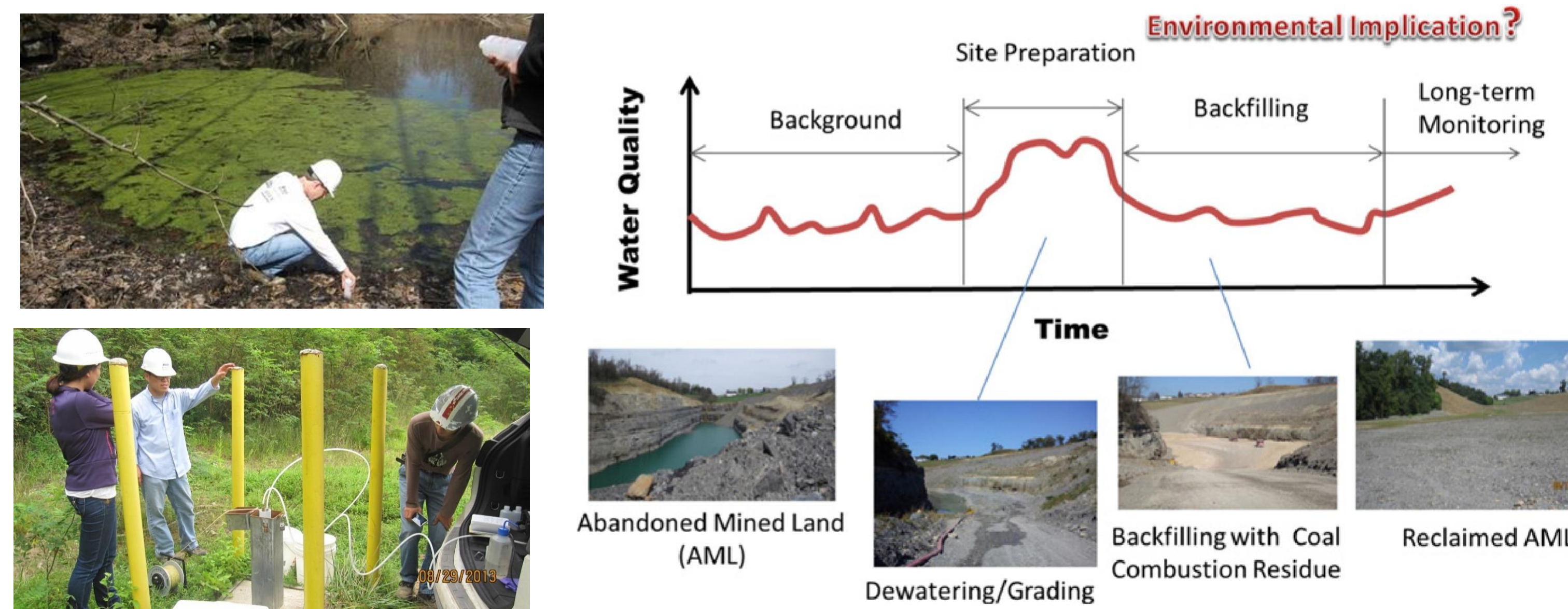
OAE overburden spoil backfill 2012

OAE backfilling highwall with FGD gypsum in 2012

OAE completes reclamation under an DMRM, reclamation permit in 2015

Impact of Reclamation on Water Quality

- Strategically placed groundwater and surface monitoring sties
- Conduct water quality modelling at selected sites



Agency Collaborations



- ODNR, Division of Mineral Resource Mgt.(DMRM) – site selection, design review, inspection, and construction permitting.
- OEPA and ACOE- surface water permitting
- Ohio Coal Development Office – funding and oversight

Outreach



May 2014 OMP Spring meeting

March 2016 ODNR Tour



2016 Chinese Delegation Tour

2018 OMP Fall Meeting

Research Advancement

- Ohio Coal Development Office:** Remediation of Coal Ash Ponds with Landfill Overfills & Reclamation at Coal Mine Sites Using FGD Byproducts: Phase IV Demonstration Projects.
- Ohio Coal Development Office:** Mineralizing Carbon Dioxide using Stabilized Flue Gas Desulfurization Material in the Presence of Acid Mine Drainage.
- U.S. Department of Energy:** Concentrating Rare Earth Elements in Acid Mine Drainage using Coal Combustion By-Products.
- OSU - Office of Outreach and Engagement:** Mitigating Impacts from Mined Lands through Remining and Reclamation.



Development Services Agency

